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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
AMINI, JAVID A	
ART UNIT	**PAPER NUMBER**
2628	

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/044,168	RISING ET AL.	
	Examiner	Art Unit	
	Javid A. Amini	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 10 January 2006.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-8,10-17 and 19-26 is/are rejected.

7)☒ Claim(s) 9, 18 and 27 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/7/2005 has been entered.

Allowable Subject Matter

Claims 9, 18, and 27 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: ***Creating adjacency matrices representing smallest portions of the set of morphism graph that map the input and rule graphs to the alphabet graph using pre-images of parts of the alphabet graph marked for change; and multiplying the adjacency matrix associated with the input graph by a transpose of the adjacency matrix associated with the rule graph.***

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8, 10-17, and 19-26 rejected under 35 U.S.C. 103(a) as being unpatentable over Uwe Assmann; Title: Graph rewrite systems for program optimization, ACM Transactions on Programming Languages and Systems (TOPLAS), Volume 22 Issue 4, July 2000, (refers as Assmann), and further in view of Euripides G.M. Petrakis, Member, IEEE, and Christos Faloutsos (hereafter refers as a "Euripides").

Claim 1.

In regard to the preamble of the claim 1, Assmann on page 583 under the subject of introduction teaches how graph rewriting can be used for the specification and generation of program optimizations (Examiner's comment: it's obvious for an ordinary person skill in the art to acknowledge the graph rewrite system involves a computerized method). The central idea of method is to regard all of the information in an optimizer as a set of relational graphs. Program objects, intermediate code instructions, and predicates of the entities of the program are represented either as nodes or relations. Program analysis and transformation are performed using graph rewriting. Typically, analyzing programs means enlarging graphs with new edges,

which represent the information, while code transformation means rewriting graphs by deleting and attaching sub graphs. The preamble is, as follows: "A computerized method of graph rewriting, a graph having nodes representing entities and edges between the nodes representing relationships between entities, the method comprising". For more information regarding a graph having nodes representing entities and edges between the nodes, see Assmann on page 587 under section "2".

As claim invention discloses that comparing an input graph representing a description scheme for multimedia content with a set of predefined template graphs, see Assmann on page 628 at forth paragraph teaches the rule sets can be transformed with the *magic set transformation* which has the effect that tuples are preselected from the database before joins are performed. The description scheme representing structure and semantics of the multimedia content, and the template graphs representing model description schemes. Assmann on page 588 teaches a graph-morphism, (e.g., Morphisms are often depicted as arrows from their domain to their codomain, e.g. if a morphism f has domain X and codomain Y, it is denoted $f: X \rightarrow Y$). Assmann on page 588 lines 1-8 teaches a function that compares the source and target nodes for edges. Assmann on page 584 at third paragraph teaches that the graph is specified in a data model. Also on page 587 teaches the graph nodes and edges must be modeled: The types of graph nodes. Among these are intermediate code instructions such as expressions, statements, loops, and procedures. Also, analyzed information can be encoded in nodes of graphs, e.g., variable definitions, or expression equivalence classes. The types of graph edges (relations). These represent all relevant predicates, which should be inferred from the intermediate representation. Some examples are relations such as classical flow dependencies, equivalence relations, calling relations, or control

flow relations. In addition, the information, which the frontend produces, must be modeled, e.g., expression tree pointering or statement lists. Obviously, this study represents structure and semantic of the multimedia content (Assmann in figs. 4-5 on page 590 illustrates the multimedia content).

As claim invention discloses in the last line of claim 1 that validating the input graph when there is a match with a template graph. Assmann on page 591 in figs. 6-7 illustrates e.g., in fig. 6 the middle graph covers what the claim language claimed, as e.g., A:1 at the left of the fig. 6 matches A:1 at the right side of the fig. 6. Similarly, in fig. 7 A:R1 matches A:1 and A:R2 matches A:2, with d matches the relationship between the two nodes.

However, Assmann does not show supporting for validating the input graph when there is a match with a template graph. Euripides on page 437 in second column teaches the first term in Eq. (1) is the cost of matching (validating as the claim language specifies) associated nodes, while the second term is the cost of matching the relationships between such nodes. In our setting, only a subset of the objects in the stored image S needs to be matched. There is no cost if the data image contains extra objects; however, we assume that the cost is infinite if the data image is missing one of the objects of the query. COST is the cost of matching features of objects or features of relationships between associated objects. The distance between images Q and S is defined as the minimum distance computed over all possible mappings F(): see Eqs. 2-4. Similarity searching in an IDB of stored ARGs requires that all images within distance t must be retrieved. Specifically, we have to retrieve all the images S that satisfy the Eq. 4 condition.

Thus, it would have been obvious to one of ordinary skill in the graphical writing system to support for multimedia content in fig. 1 with its corresponding ARG of Euripides for

searching by image content in image databases that represented by attributed relational graphs, because Assmann teaches this to be known in the graph rewrite system for program optimization.

Claim 2.

The computerized method of claim 1, wherein the comparing uses a graph matching process. Assmann in fig. 7 illustrates that matching process. Euripides on page 436 under section 2.1 discloses image descriptions are given in terms of object properties, and in terms of relationships between objects. The textbook approach to capture this information is the Attributed Relational Graphs (ARGs). In an ARG, graph nodes represent the objects, and arcs between such nodes represent the relationships between objects. Both nodes and arcs are labeled by attributes corresponding to properties (features) of objects and relationships, respectively.

Claim 3.

The computerized method of claim 2, wherein the comparing comprises: creating adjacency matrices representing the input graph and the set of template graphs. Assmann is silenced about creating adjacency matrices representing the input graph and the set of template graphs. Euripides on page 440 under section 4.1 and in second column teaches that additional features that could be used include the average gray-level and texture values, moments, or Fourier coefficients, etc., as object descriptors; relative size, amount of overlap-ping, or adjacency, etc., can be also used to characterize the relationships between objects.

Claims 4 and 5.

The computerized method of claim 1 further comprising: evaluating the input graph against a set of pre-defined alphabet graphs; and applying a rule associated with a matching alphabet graph to the input graph, the rule represented by a rule graph and a set of morphism graphs. Assmann does not explicitly specify the term "alphabet graph". Euripides on page 437 in column one discloses matching a query and a stored graph is treated as a sub graph isomorphism problem. Examiner comment: the meaning of morphism is an abstraction of a function or mapping between two objects.

Claim 6.

The computerized method of claim 5, wherein the evaluating comprises: creating adjacency matrices for the input graph and the set of alphabet graphs. Euripides on page 439 in the first column discloses that the CAFIIR system proposes the "iconic index tree" to accelerate the search on facial images. One novelty of the system is that it can process "fuzzy" (i.e., subjective or in-complete) queries, through the so-called "fuzzification" technique, which translates the feature space to a fuzzy space. Also see page 440 the last paragraph before section 4.2 Euripides discloses set of alphabet graph or image translated or scaled with respect to each other.

Claims 7 and 8.

The computerized method of claim 4, wherein the applying comprises: performing pushout/pullback operations. As Applicant on page 11 paragraph 0029 discloses that the two

particular operations in algebraic graph grammars are suitable to build graph rewriting techniques for description scheme graphs: pushout and pullback. Pushouts and pullbacks can be thought of as sums and products, respectively. The limitations in these claims are obvious because in a graph rewrite systems for program optimization performs pullback and pushback operations to find the matching graph. Euripides on page 437 in Eqs. 1 –4 clearly shows the meaning of sums and products. Also in fig. 1b illustrates the pullback (also called the fiber product) is the limit of a diagram consisting of at least two morphisms r23: v2 → v3 and r12: v1 →v3 with a common codomain (A set within which the values of a function lie (as opposed to the range, which is the set of values that the function actually takes). Explicitly, the pullback of the morphisms r23 and r12 consists of an object v0 and two morphisms r01: v0 → v1 and r02: v0 → v3 for which the diagram. The categorical dual of a pullback is a called a pushout.

Claim 10.

The rejection of claim 1 is similar to the rejection for claim 10.

Claims 11-17

The rejection of claims 2-8 is similar to the rejection of claims 11-17.

Claims 19-26

The rejection of claims 2-8 is similar to the rejection of claims 19-26.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Javid A. Amini whose telephone number is 571-272-7654. The examiner can normally be reached on 8-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on 571-272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Javid A Amini
Examiner
Art Unit 2672

Javid Amini